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Interactive Multimedia-based Mobile Application for Learning Iban Language (I-MMAPS for Learning Iban Language)

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Abstract

The emergence of mobile technological devices has brought along new possibilities to all walks of life in various communities. As mobile devices with highest capabilities extend into all areas of human life, they also affected language learning and mobile education. There are many mobile applications created for most of the major languages in the world and much lesser amount is available for the far less used languages. Iban language is an example of those languages given far less attention as it is not as practical as other world languages. Iban language has been chosen to be implemented as a multimedia-based mobile application to promote language learning due to its richness in unique culture and language. The application; I- MMAPPS for learning Iban language was designed and developed by adapting conversational method and constructivism learning theory to provide learners a different approach in learning language based on various environments and situations. Since Iban pronunciations are different from any Malaysians local dialects, thus the correct pronunciations are vital to assists the learner. 30 non native speakers were chosen to test the application. The outcomes that this research presented have shown that, this application is a promising development in future research. Most of the respondents were satisfied when they learn Iban language using the application.

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Keywords: m-learning; Iban language; conversational; language learning; constructivism

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1. Introduction

Traditional language learning often requires learners to attend class and the learning process always involves reading and memorizing words and phrases. Edge, Searle, Chiu, Jing, Z. & James (2011) said that for all such learners, the challenge is to maintain the motivation to spend time learning due to the hectic lifestyle. Traditional learning context experiencing radical changes and challenges where people need to learn what they are interested or need to learn, without time and location constraints. According to Edge et al. (2011), aside from people who need to use and learn a second language in their chosen professional careers, many language learners simply do not have the time or resources to dedicate two years of their lives to intensive or immersive instruction. Therefore, mobile learning is seen as the current alternative in assisting and motivating people to learn the language on the go.

1.1 Learning the Iban language

The Iban language is one of the indigenous language in Sarawak State of Malaysia whereby Iban is a major ethnic group mostly residing in Sri Aman, Betong, and Miri which geographically covers half of Sarawak. Hence Iban language is a major native language spoken by the people in Sarawak even communicating with non-native speakers. According to Sarawak Tourism Board (2013), Sarawak receives over 100,000 visitors monthly. The visitors are very interested in Iban culture and visiting Iban longhouses to learn and experience the culture and life of an Iban community. However, they have difficulties in communicating with the native speakers. The chances of visitors who come across non English speaking Ibans are higher due to the spread of small towns and kampongs from Kuching to Limbang. The coverage of Iban communities across these two points is wide. In the said areas, the Iban folks are working in places such as wet markets selling jungle produce, coffee shops as waiters or waitresses and various public services such as ferry drivers, jungle trackers, tourist guides and bus conductors to name a few. Learning a third language is not easy for non-native speakers as it has a seriously steep learning curve. Currently, the only available means to learn Iban language is through traditional language learning in schools using textbooks and dictionaries. The search in GooglePlay market on application in learning Iban language also did not yield any results.

Constructivism is an extension to Cognitive learning theory by Jean Piaget (Perry, 1999). Cognitive learning theory is central to the study of how a person's thinking process develops since childhood which greatly affects how a person thinks and subsequently reacts to what he/she will learn during adulthood. Because cognitive theory centers mainly on child development thus constructivism theory was born. Constructivism suggests that learning is an ever active process. Therefore educators should be more sensitive towards the learners' needs associated to the aforementioned elements which the learners carry with them which are constantly changing with experience (Dan, Shinxia, Qingyun, Zuhua, & Shaohui, 2009). In this case, teaching of new knowledge based on constructivism must ensure the learning experience as part of the development of the learners' personal experience. It is very self-directed, and the result of learning itself is achieved by the learner's self-motivation. As opposed to learning based on the behaviourism approach, constructivist learners are motivated intrinsically instead of the typical reward and punish system introduced by behaviourism (Danet al., 2009). Chen, Wu, Song & Chen (2009) also mentioned in their research that constructivism learning theory considered "scene", "cooperation", "dialogue" and "construction of meaning" as properties in the learning environment, which are very important during the learning process. Especially in the context of 21st century education, education is becoming more open-ended and learners are being exposed to more alternatives of knowledge and also sources that they can use.

1.2 Mobile learning

In the world where emerging technology-supported devices are rapidly growing, wireless communication technology is not an exception in this respect. As mobile devices with higher capabilities extend into all areas of human life, it also gives impact to the education field, especially in language learning and mobile education. These two areas have been intersecting into an enhanced way of e-learning called m- learning (Norman Bujang & Riaza Mohd Rias, 2012). Mobile learning is a growing area of e-learning due to continually increasing demand by the

learners, in addition to the increasing multimedia and networking capabilities of mobile devices. Mobile applications are designed to be used in mobile devices, thus enabling learners to carry the applications to different places. Mobile learning can get rid of the constraints of time and space, people can study anywhere and anytime they want, according to their study needs. Some of the mobile devices used in M-learning are servers, laptops, tablet computers, smart phones, PDAs, MP3/MP4 players, handheld gaming devices, mini notebooks or netbooks and others (Hashemi, Azizinezhad, Najafi & Nesari (2011). Mobile phones are the most powerful communication medium as it can act as a learning device despite its technical limitations. With such a learning device, the learner controls the learning process and progress in his/her own space based on his/her cognitive space. Today, the mobile and communication technology gives social impact in our daily living. According to Agah Tugrul Korucu & Ayse Alkan (2011), mobile learning is defined as a point interacted to provide mobile computer technologies and internet-based learning to be 'any time', 'anywhere' learning experience. Mobile learning enables learners' to connect to various sources of information and conveniently to communicate anywhere and anytime. This is possible with the wide-spread penetration of mobile technology, combined with increasing technological capabilities, such as internet access, location detection and multimedia presentation (text images, video and audio). One of the potential advantages of mobile learning is the freedom to learn what, where, when and how one likes (Frasen, 2008).

The use of mobile learning in the study of languages has been popular. A clear trend is the development of gamed-based mobile language learning application and text-based language learning application. As cited in Kukulska-Hulme & Shield, (2008), most of the current mobile applications for language learning are text-based, such as TensITS (Cui & Bull, 2005). This system focuses on the explanations and exercises for the tenses, and the appropriate content or exercises are selected based on the user's knowledge state and their context. The system only use multimedia element, text in interaction with the users. According to Sandberg, Maris & Geus (2011), research studies on these applications have demonstrated their potential as a learning device. Godwin, (2011) reported on his projects after surveyed the state of mobile language learning, that, the picture taking, text messaging and dual language dictionaries are proven to be very useful. Abdelkarim, Sajeda, Hind & Lubna (2012), in their research, also had come out with the design and developed a multimedia m-Learning platform (named ArabicTutor) for interactive learning of Arabic spelling and vocabulary. It uses interactive game-based delivery methods to acquire new linguistic skills in a playful manner. Another example is Mobile Language Translation game (named SPELL IT!) done by Wan Fatimah et.al (2012), also has been proven to be both relevant and beneficial to the society as a learning tool to learn English language. Presnky (2001) suggested that a gaming approach to language instruction is more essentially motivating than non-gaming approach. In learning Iban language, M-Jako Iban uses animated technology into multimedia environment that provides dialogue-based application that enable learners to immerse in the learning environment and understand the right usage of Iban language.

2. Conceptual framework for designing and developing mobile application

A conceptual framework as shown in Figure 1 is used to outline possible courses of action or to present a preferred approach to an idea of designing and development of a mobile application for learning Iban language. This consisted of the analysis phase of the ADDIE model. The ADDIE Model is a framework that lists generic processes that instructional designers and training developers use, representing a guideline for building effective training and performance support tools in five phases: analysis; design; development; implementation and evaluation. The target audience was identified as tourists visiting Sarawak in terms of their learning mode, environment and social interactivity. In the content analysis, to ensure that the information of the chosen phrases and vocabulary were delivered sufficiently, the contents were selected by referring to three main resources: Iban language experts; Iban Vocabulary Book produced by Tun Jugah Foundation and Iban text books (Leonard Linggi, Gerunsin L., Janet, R., N., Alexander, N., L., Jantan, U., Jimmy, D., Ronald, D., K., Vinson & Sutle, J., 2010). The learning objectives were also highlighted so that the target audience was able to use Iban language. Product delivery focused on the authoring tools and type of mobile platforms used. Investigation on the availability of Iban mobile application for learning language was also conducted. This is to prove that there is no existing application. Based on an investigation done on the three most popular mobile platforms namely Android, iPhone and Symbian, currently

there are no existing applications to cater the need to learn Iban language. This is supported by Norman Bujang & Riaza Mohd Rias (2012).

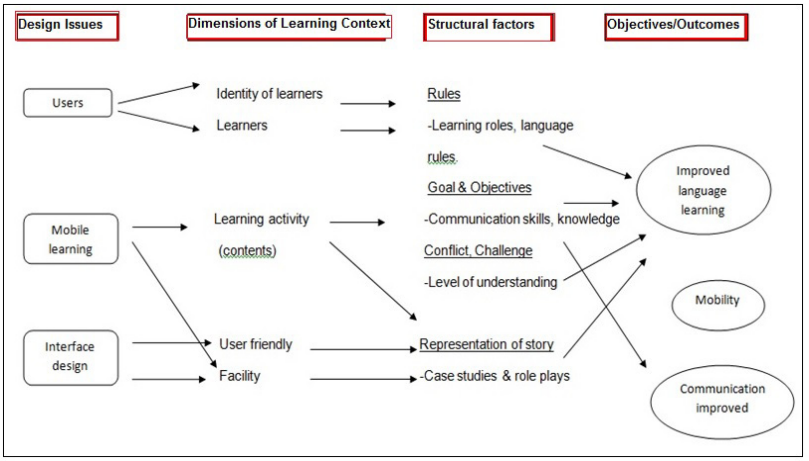

Fig. 1. Conceptual Framework for Designing and Developing Mobile Application for Learning Iban Language

3. Content design framework of mobile application

The framework was used for structuring the overall design of the application. The results of the development process are reported based on the ADDIE model with respect to the subsequent four phases after analysis that consisted of the design, development, implementation and evaluation as indicated in Figure 2.

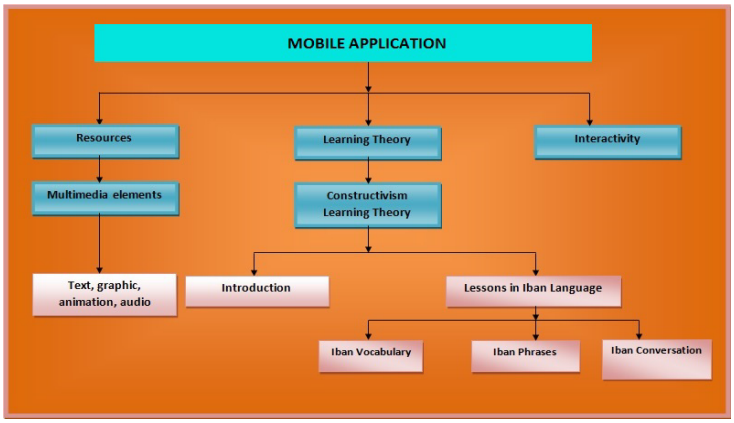

Fig. 2. Content Design Framework of Mobile Application for Learning Iban language based on Conversational Method and Constructivism

The design phase which was the process of defining the message and describing the user interaction with the content and the application using storyboarding that involved developing screen layouts that described the content, flow and format. The design of layout and storyboard used Buttons designs for categories by adopting Iban '*Pua Kumbu'* drawing. The content design was done based on the storyboarding process to ensure that the story of ideas

and concepts could be turned into reality which depended on the existing resources and also new materials such as texts and graphics to display the contents as learning material and the voice of native speaker for listening purpose. Other criteria considered in this phase included the learning theories and also interactivity based on the constructivism theory. The learning context had been divided into three parts: vocabulary, basic phrases, and conversation. Thus, the content framework consisted of three components: resources; learning theories and interactivity. The most important part of the Resources component was the selection of resources in terms of the multimedia elements. The multimedia elements were integrated as teaching and learning stimulants so that it stimulated the users' cognitive processes in order to be activated to learn the language effectively. Elements such as text, graphic, animation and audio were used in developing the application. Constructivism learning theory applied focused on how constructivist learning theory enables the mobile technology to focus on the user's ability to be self-directed and ability to draw conclusions. This learning theory allowed user to work independently. Based on Atherton, (2005), constructivism is particularly in its "social' forms which suggest that the learner is much more actively involved in a joint enterprise with the teacher of "constructing" new meanings. An example of which constructivism theory in development of the application was the users would be able to understand and speak in Iban language with the native speakers. Interactivity refers to the activities performed by both learner and the application. The interactivity aspects such as navigation buttons were also important in designing the application. The elements chosen for the multimedia prototypes were texts, still images and audio. The drawings were done in Adobe Photoshop CS5 to utilize the program's ability to create vector graphics. Vector graphics are smaller in size as compared to bitmap graphics. Animations were done in Flash CS5. Sound was compressed to reduce the file size and background music converted into wav file format. The mobile device model used in the development process was Samsung Galaxy Tablet 7.7 which comes with an Android platform. The tablet ran on Android Ice Cream Sandwich supporting larger file without memory limitations. This phase involved three activities. Android system was chosen as the medium to develop this application as it was a more attractive choice since there were many development tools available for this operating system. Corona SDK which was the development tool used to develop this application let developers to use integrated Lua, layered on top of C++/OpenGL, to build graphic applications since this mobile application contained multimedia elements. Once completed, this mobile app will be installed in mobile devices and then handed to target user for testing and evaluation.

4. Research question

Mobile application can inspire and motivate learners to learn language via mobile learning (Norman Bujang & Riaza Mohd Rias, 2012). The use of auditory modality can theoretically provide benefit to the language learner in several key areas. One of the benefits of audio is as a pronunciation guide. It is important for language learners to know exactly how to pronounce a new word that they are not familiar with. Other benefits are pronunciation correction and conversational practice to assist fluency. Therefore, two research questions were formulated: "Can the user learn to speak a basic level of Iban through using the interactive multimedia-based mobile application?" and "What are the satisfaction levels among users towards the interactive multimedia-based mobile application for Iban language learning?"

5. Methodology

The mobile application prototypes were tested by 30 non-native speakers as respondents. The respondents were interviewed first to ensure they were non-native speakers. They were trained on how to use the application for 30 minutes and given 15 minutes to explore and learning Iban language via the application. After that, they were given a simple written test to test on their level of understanding in Iban basic vocabulary and phrases. Then the respondents were given a structured questionnaire based on four constructs of I-MMAPPS for Learning Iban Language: content, ease of use, accuracy and satisfaction with I-MMAPPS for learning Iban Language. The data derived from the questionnaires were analyzed using the Statistical Package whereby descriptive statistics were utilized.

6. Results

During the testing phase, users were able to handle the application without any problems as result of the intuitive interfaces as indicated in Table 1. A range of score between 20% to 89% was obtained. 76.7% users passed the test while 67.0 % of the user scored above 60.0 %. Thus it reflected that the user can learn to speak a basic level of Iban through using the interactive multimedia-based mobile application

Table 1. Analysis of users' performance

Marks	Frequency	Percent (%)	Passes (%)
90 – 100	0	0.0	
80 – 89	2	6.6	
70 – 79	10	33.3	76.7
60 – 69	8	26.7	
50 – 59	3	20.0	
40 – 49	3	10.0	
30 – 39	2	6.7	16.7
20 – 29	1	3.3	

Table 2 is the overall user satisfaction towards I-MMAPPS for Learning Iban Language as determined based on four constructs of I-MMAPPS for Learning Iban Language. The users' satisfaction levels towards the application was fairly high, which means most of the time users were satisfied with the application as reflected by the mean scores ranging from 4 to 5. The highest mean score is from *ease of use* with the mean score of 4.61 out of a possible 5 points categorized as "Very Good". Second highest was followed by the *user satisfaction* towards I-MMAPPS for learning Iban language with the mean score of 4.46. *Content* also obtained satisfaction levels at "Good", with a mean score of 4.41. The lowest mean score was *accuracy* with 4.38. Thus it confirmed that most of the respondents are satisfied with interactive multimedia-based mobile application for Iban language learning.

Table 2. Mean score of overall user satisfactions towards I-MMAPPS for learning Iban

Section	Mean Score
Content	4.41
Ease of use	4.61
Accuracy	4.38
User Satisfaction	4.46

7. Conclusion

Based on the findings, it can be concluded I-MMAPPS for learning Iban language is helpful in developing positive interest and useful for the non native speakers to understand and speak Iban language. Respondents have stated that they prefer to learn using Iban language using the mobile application because it helped them understand better with the aid of audio (voice of native speaker) and samples of graphic implemented in the application. It also indicated that the users' satisfaction towards the application is high. However further studies need to be done to enhance the design and functions such as the search function that could have enable the users to search for their desired words or phrases.

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